

84-17

GODWIN STEEL PAVING GUARDS

(6)

PROTECT THE EDGES
of ROAD, STREET, CURB
AND RAILWAY PAVING

(7)

BOOKLET "N"

(8)

W. S. Godwin Company, Inc.

12 East Lexington Street, ••• Baltimore, Maryland.

THE PAVILION OF
THE VILLAGE

AUG 26 '28

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++STEEL+PAVING+GUARDS+PROTECT+THE+EDGES+OF+STREETS+ROADS+CURBS+RAILWAY-PAVING+ETC.+

PAVING'S WEAK POINT

THE edge is the weak spot in any paving. At that point, the strength is much less than the strength of the interior portion. The wear of traffic and the action of the elements affect the edge long before the paving surface begins to show deterioration. Tests and actual service have proved conclusively that to overcome this inherent weakness, there must be a rigid side support to the paving and one that will not disintegrate under heavy traffic.

The Godwin Steel Paving Guard is the most practical and efficient device ever produced to eliminate paving edge wear. Correct engineering principles are embodied in its design. It reinforces the paving base, holds the surface rigid, thus preventing movement and disintegration, and provides a steel retaining wall that neither time nor traffic can affect. The truss design absorbs and distributes the tremendous battering of heavy traffic.

These patented guards are the result of twenty years practical paving experience and engineering study, devoted to the problem of curing a universal paving evil. Five years of comparative service in protecting all kinds of paving surfaces and bases, has proven their merit, economy and actual necessity.

W. S. GODWIN COMPANY, Inc.
12 E. Lexington Street, - - Baltimore, Md.

10 38-310880 TCF

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"STEEL BOUND" PAVING

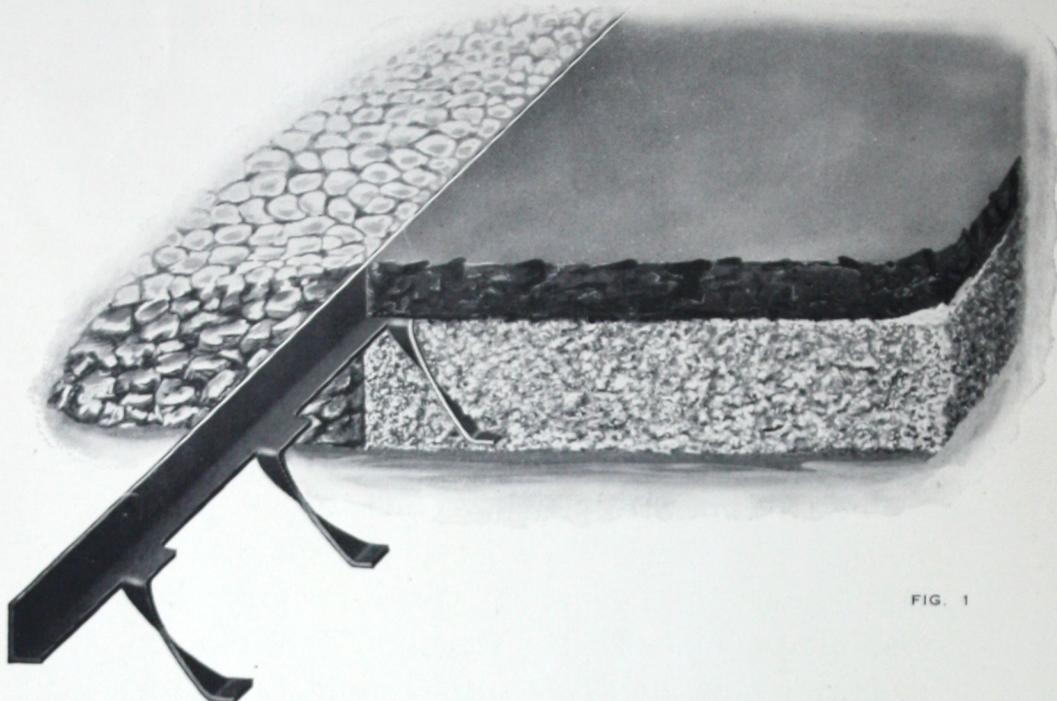


FIG. 1

THE PROBLEM OF HIGHWAY EDGING

The best paving ever laid has invariably broken down at its weakest point—the edge. Once the disintegration begins, the final result is inevitable, and is retarded only by constant vigilance and constant expense in repairing the edge. This experience is all too familiar to the engineer. Planks and blocks as guards are displaced and concrete edging crumbles. The paving edge has always been the heart of the maintenance charge.

STEEL IS THE ANSWER

A rigid retaining wall of steel, confining the paving edge, and anchored deep in the foundation has solved the difficulty. Steel Paving Guards seal the edge of the road, hold firm the paving surface, reinforce the base and both absorb and distribute the shock of modern motor traffic. It is the only edging which has ever stood up under the punishment of the motor truck.

PROVEN BY SERVICE

The record of Godwin Steel Paving Guards wherever they have been in service is an open book. Their efficiency and economy over all other forms of edging is definitely established in the engineering world. Service data is freely available, particularly the location of all paving, where they are in use.

FOR PAVING OF ANY KIND

There is a standard form of Steel Paving Guard for every type of road, street, curb, or platform. Several of these are illustrated in this booklet. In fact, some entirely new types of road building have been developed and several old and admirable ones revived with the advent of steel as an edging. One of the former is the use of pre-cast concrete slabs for railroad crossings.

Illustrations of some Uses

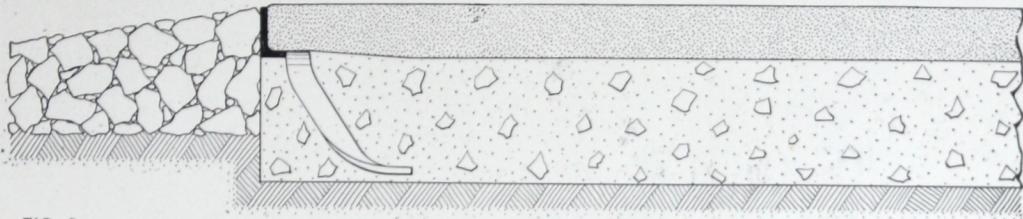


FIG. 2

2" Asphalt—5" Concrete Base—2" Straight Guard

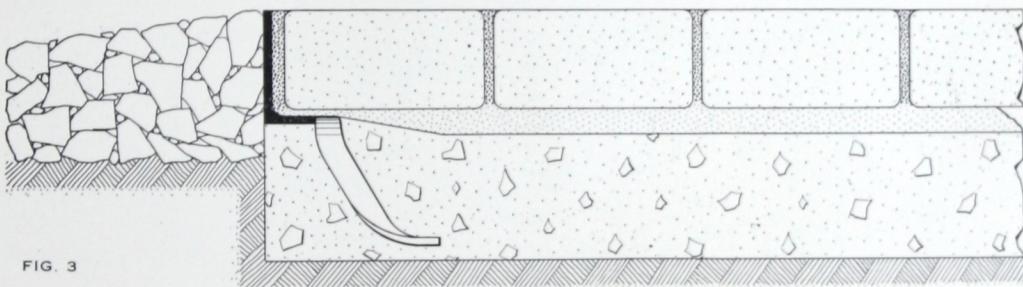


FIG. 3

4" Brick—1" Mortar Cushion—5" Concrete Base—4½" Straight Guard

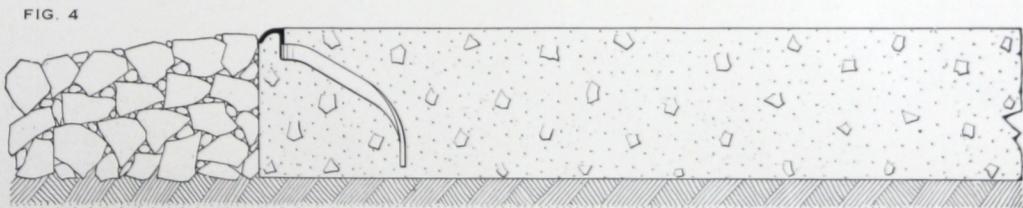


FIG. 4

6" Concrete Paving—Galvanized Round Curb Guard

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The Wm. Penn Highway, near Reading, Pa.

FIG. 4½

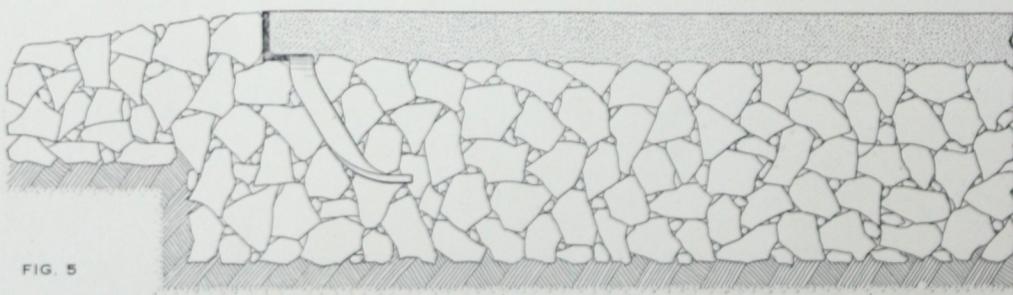
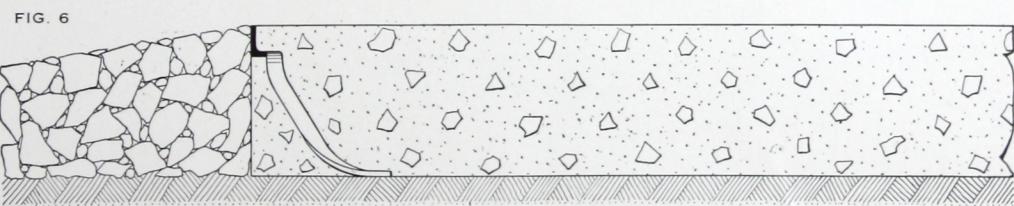


FIG. 5

2" Asphalt—Old Macadam Base—2" Straight Guard

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+ + + P A T E N T E D : + N O V E M B E R + 2 0 T H , + 1 9 1 7 + D E C E M B E R + 9 T H , + 1 9 1 9 + A N D + A U G U S T + 1 0 T H , + 1 9 2 0 + + +



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The Hog Island Road, Philadelphia, Pa.

FIG. 6½

The amazing daily tonnage carried by this 16 foot road during the war, was estimated by the Highway Engineer at 700 tons per foot width of road.

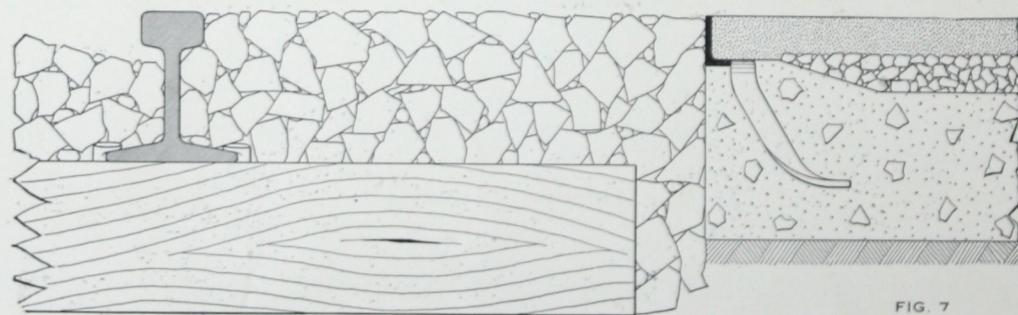


FIG. 7

1½" Asphalt—1" Binder—5" Concrete Base—2" Straight Guard

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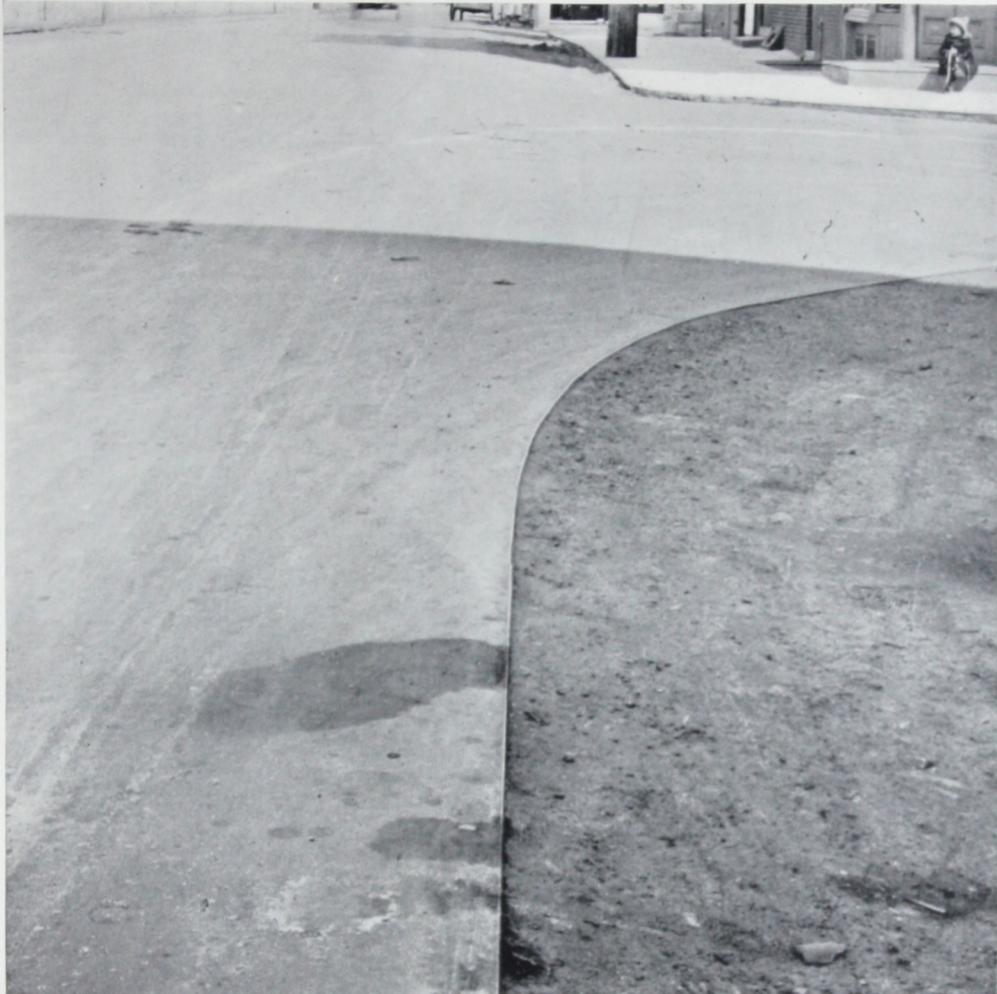


FIG. 57

Pennsylvania State Highway through Fernwood

$2\frac{1}{2}$ " Asphalt—6" Concrete Base—2" Straight Guard—Showing 8' Radius.
Guard Bent in Place.

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STEEL PAVING GUARDS

Prevent
disintegration

Prevent
repairs

By using
Steel Guards

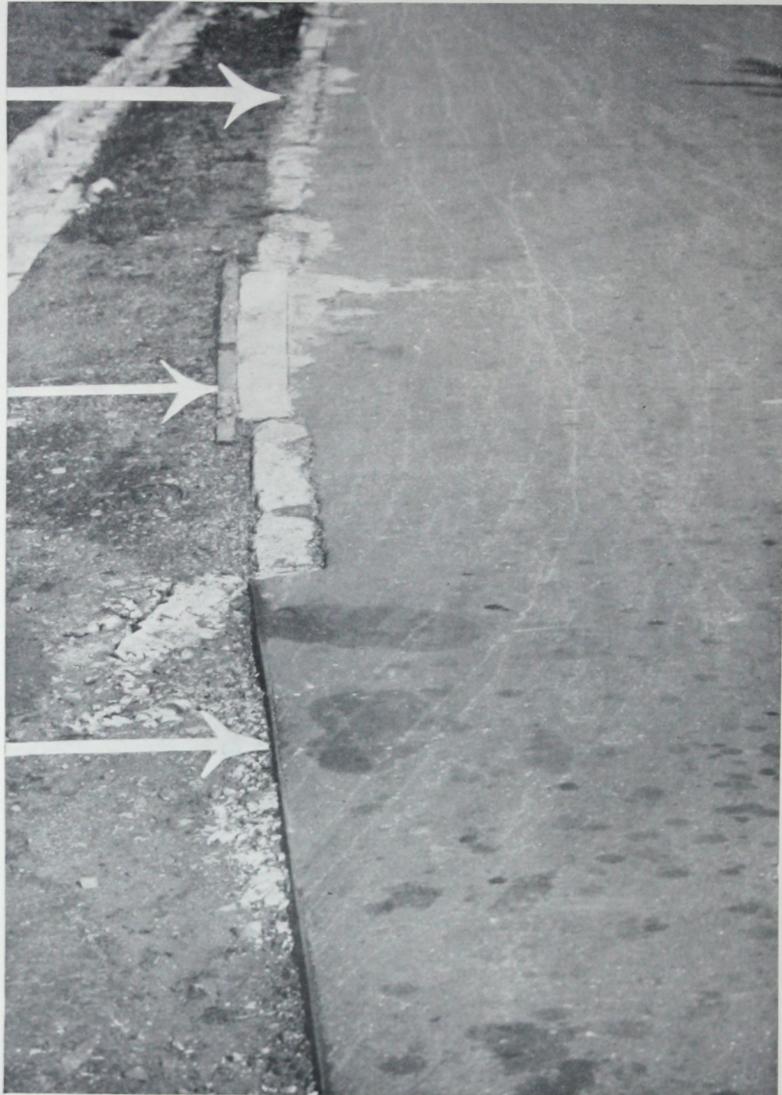


FIG. 42

Entrance, Sea View Hospital, New York City.

Showing the relative service given by Godwin 2" straight guard and 6" concrete header (1-2-3 mix.) Constructed 1917. 2" Asphaltic Concrete—6" Concrete Base.

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ILLUSTRATING SERVICE



FIG. 59

Photographed 1919
Upon Installation

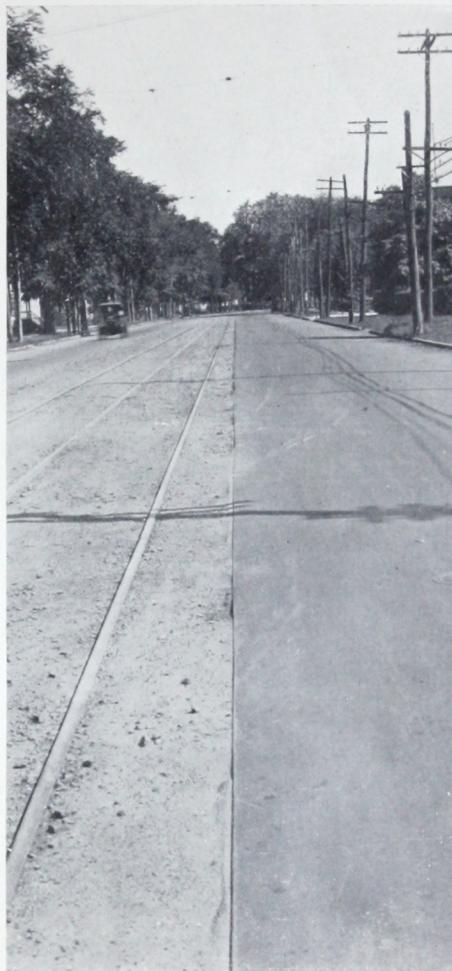


FIG. 60

Photographed 1923
Four Year's Service

Connecticut State Highway, through Dixwell Avenue, New Haven
3" Asphalt—5" Concrete Base—2" Straight Guard and unpaved railway area.

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PAVING THE SURFACE OF OLD MACADAM

An admirable and economical type of paving if the sides are properly retained and sealed. The Steel Paving Guard is particularly adapted to this type of highway.

Specification

The work includes concrete retaining sides with steel paving guards, spiking, reshaping and rolling the old macadam between the concrete sides to form a base for the 2" bituminous paving and other incidental work that is necessary to complete the work.

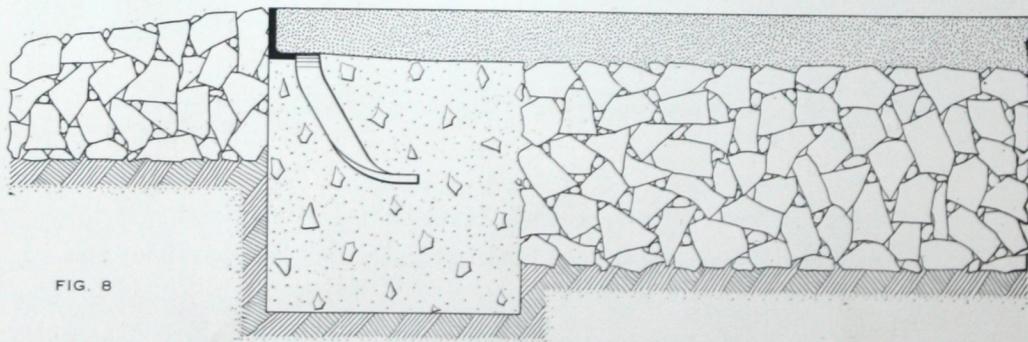
EDGING. The 10" x 10" concrete retaining sides shall be a 1-3-5 mixture and have a $\frac{1}{8}$ " expansion joint at every other end of each section of the steel guard. The concrete shall be tamped even with the top of the horizontal leg of the steel guard, so the guard will have a continuous and rigid bearing.

STEEL PAVING GUARDS. (See page 12 for Steel Paving Guard Specifications.)

RESHAPING. After the present macadam road is spiked, it shall be graded by filling the low areas with stone secured from the areas above grade, or when there is not sufficient of this old material, upon orders from the Engineer, by new approved 1 $\frac{1}{2}$ " crushed stone. This loose stone shall be bonded together by using either material available from the grading, or when ordered by the Engineer, new screenings shall be used.

ROLLING. The entire surface shall be thoroughly spiked and rolled with a 10-ton steam roller to a true $\frac{1}{4}$ " crown which at all points shall be at least 2" below the top of the paving guards.

SHOULDERS. All surplus material, if suitable, shall be placed in the shoulders of the road within the limits of the contract as directed.



INTERSECTING HEADERS



FIG. 58

Bronx Parkway, New York City, Constructed in 1917

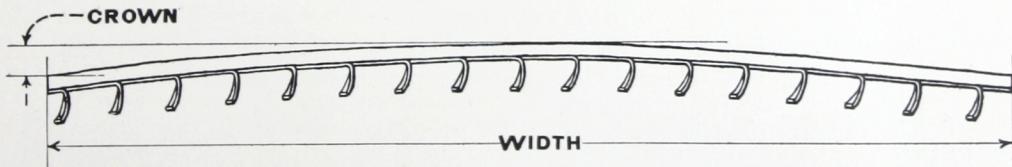


FIG. 55

Intersecting Headers are straight Steel Paving Guards bent to the crown of the paving. They are used in place of granite or concrete at the ends of the paving.

When ordering give size of guard, total crown of street and total width of street.

For cross sections see any of the preceding drawings. See page 12 for installation instructions.

INSTALLING STRAIGHT GUARDS

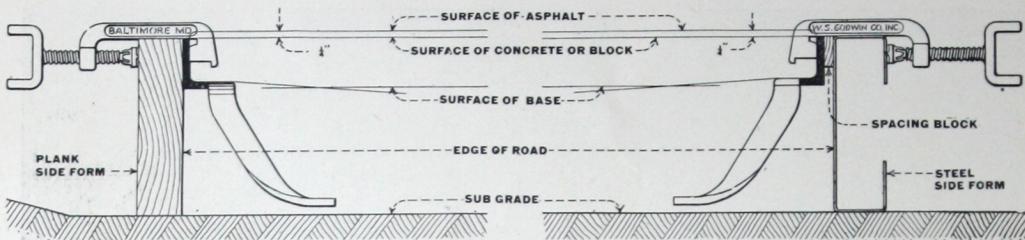


FIG. 54

Figure 54 shows the method of installing straight guards and the use of guard clamps.

When the construction allows it, use $\frac{3}{8}$ " spacing blocks between the side forms and the vertical leg of the guard, opposite the clamps.

Then pour grout between the side form and the guard, up to $\frac{1}{2}$ " above the base of guard. Side forms must be used to save concrete and to insure good work.

SPECIFICATION FOR STEEL PAVING GUARDS

Both sides of the paving and across each end are to be protected by" Straight Steel Paving Guards. The price bid for the paving shall include furnishing and installing the guards.

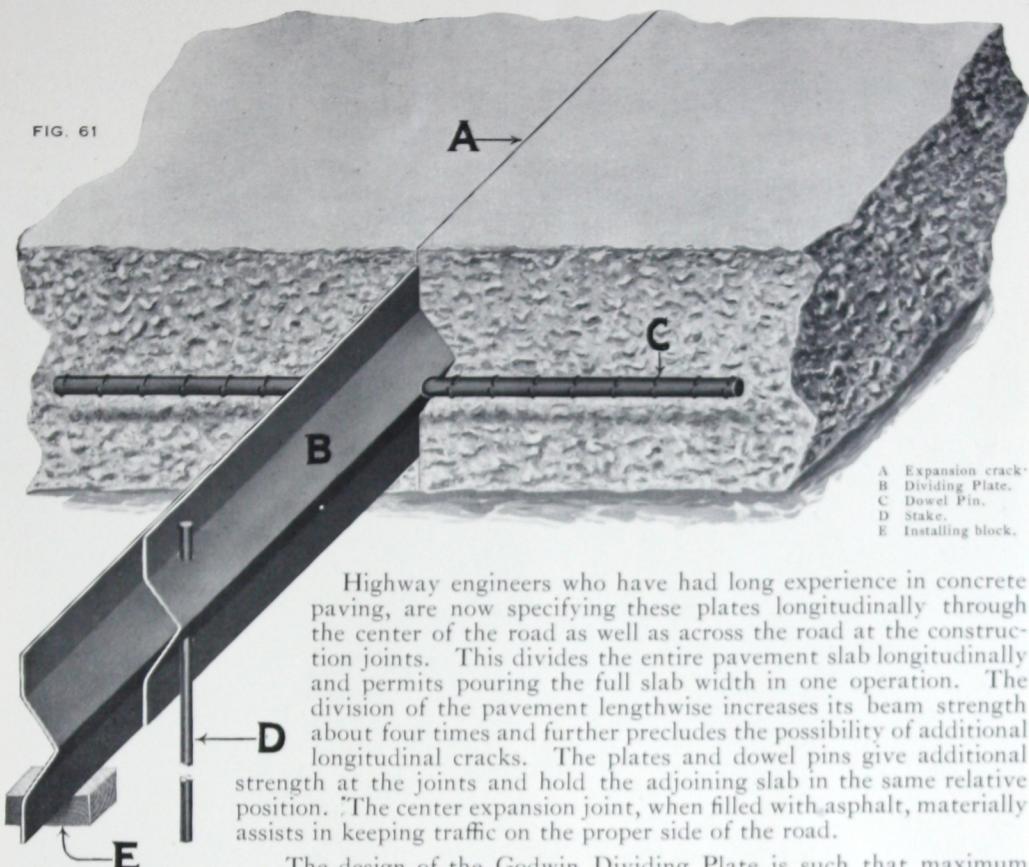
The vertical leg of the guard to be" and not less than" thick. 1" anchors are to be sheared from the outer edge of the horizontal leg of the guard every 10", twisted and bent, so they extend at least 4" below the surface of the concrete base.

Fasten the guards to the side forms with sufficient clamps (at least 3 to each length) or nails to hold the guard VERTICAL and to line and grade.

The concrete shall be worked UNDER the guards and thoroughly tamped LEVEL with the top of the horizontal leg of the guard, so they will have a continuous rigid bearing.

The finished surface of asphalt paving shall be $\frac{1}{4}$ " above the top of the guard. The finished surface of block or concrete paving shall be level with the top of the guard.

DIVIDING PLATES FOR CONCRETE PAVING



Highway engineers who have had long experience in concrete paving, are now specifying these plates longitudinally through the center of the road as well as across the road at the construction joints. This divides the entire pavement slab longitudinally and permits pouring the full slab width in one operation. The division of the pavement lengthwise increases its beam strength about four times and further precludes the possibility of additional longitudinal cracks. The plates and dowel pins give additional strength at the joints and hold the adjoining slab in the same relative position. The center expansion joint, when filled with asphalt, materially assists in keeping traffic on the proper side of the road.

The design of the Godwin Dividing Plate is such that maximum strength and rigidity are insured; with ease of handling and installation; and perfect flow of concrete with complete filling against both sides.

Specifications for Dividing Plates, Dowel Pins and Stakes

The plates shall be placed longitudinally through the center of the road, also across the road at construction joints. $\frac{1}{2}$ " below the finished surface, as shown on the detailed drawing.

These plates shall be of 18 gauge Bessemer Steel, $5\frac{1}{2}$ " high and not less than 8' lengths, with 3" laps, a 1" deep trough through the center and $1\frac{1}{4}$ " vertical wings; punched to receive the dowels and stakes and painted or galvanized after fabrication.

The permanent Steel Stakes for holding the plates to line shall be $\frac{3}{8}$ " round and not less than 15" long and not over 3'-10" apart.

The horizontal deformed steel Dowel Pins shall have a cross section area of not less than $\frac{1}{2}$ " round; 4" in length and not over 5'-2" apart. One half the length of each pin shall be wrapped so there shall be no bond with the concrete. These shall be carefully placed parallel to both the finished surface and the axis of the pavement.

If it is desired to construct the paving in two strips of equal width, clamp the flat side of the dividing plate to the side forms. This method is also used across the roadway at the construction joints.

The square yard price bid for the paving shall include the supplying and installing, in accordance with the drawings, of the plates, pins and stakes.

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RAILWAY PAVING WITH STEEL PAVING GUARDS

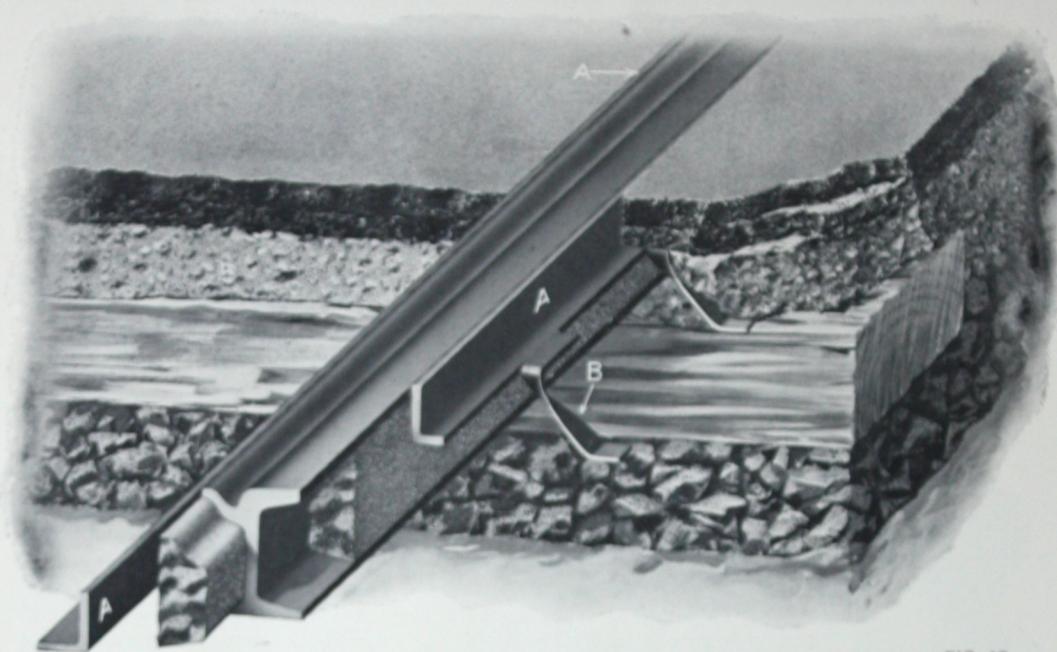


FIG. 10

Steel Paving Guards

*guarantee perfect paving
in the railway area*

Steel Bound Paving

*— costs less to install
— costs less to maintain*

ESSENTIALS OF GOOD STREET RAILWAY PAVING

- 1—It must be protected against the wave motion of the rails.
- 2—It must be protected against lateral rail movement.
- 3—It must prevent seepage below the surface.
- 4—It must have sufficient strength above the cross ties to support modern traffic.
- 5—There must be provided a rigid lateral support.
- 6—There should be no contact between the paving and the car wheel.

Engineers know that no railway paving construction has ever economically met all of these requirements. How Godwin Steel Paving Guards have solved the entire problem will be shown in the following pages.

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ONE OF THE ENGINEER'S BIGGEST PROBLEMS

Street Railway Paving

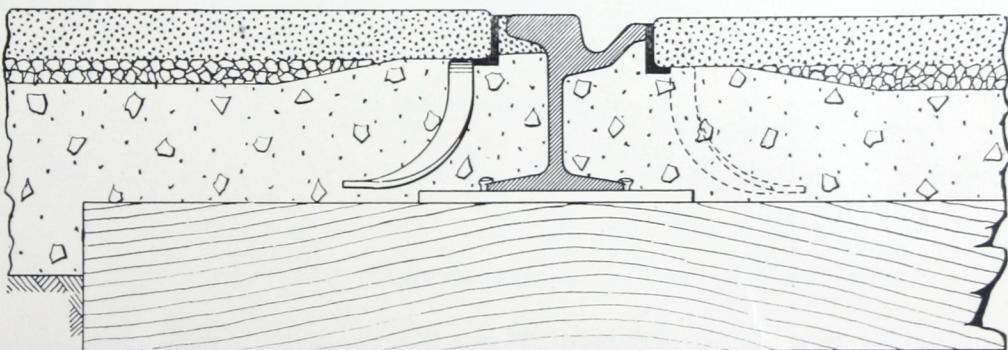
The first principle of good paving and the first principle of good track engineering are exact opposites. Paving must be rigid. Track structure is elastic. And where they both meet (at the rail) the result is disastrous to maintenance charges. The clashing of these two basic principles has been the most perplexing problem in street railway engineering, until it was solved by the Godwin Steel Paving Guard.

General street railway track engineering experience has established the fact that repairs to paving in the railway area consume approximately 35% of the total cost of maintenance of ways.



2nd and E. Capitol Streets, Washington, D. C.

FIG. 29



•3" Asphalt Paving—6" Concrete Base—7" Grooved Rail—2" Straight Guards.

FIG. 30

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STEEL PAVING GUARDS SOLVE THE RAILWAY PAVING PROBLEM

The absolute simplicity of the principle involved in the use of steel guards for railway paving is shown in the accompanying illustrations. It strikes one with the force of immediate conviction. So much so, that when first proposed, Godwin Steel Guards met with quite universal approval even before service had proved their merit.

The Steel Paving Guard is a rigid indestructible retaining wall of Steel, reinforcing and holding the pavement rigid on the one side and permitting the wave movements of the rails on the other side.

The Steel Paving Guard, anchored deep into the paving base, binds the surface and base into a rigid unit—entirely undisturbed by the vibration of the track structure. At the same time the rail, filler and tie become a truly independent resilient unit—with damage to its rigid neighbor. It is the *only* proven protective agent which permits of rigid paving construction and elastic track construction adjacent to each other.

A pavement protected with steel guards maintains an even and unbroken surface. No ruts or pot-holes develop at the rails. It does not sink, heave nor disintegrate. There is no ragged line of headers or stretchers breaking away from the paving. In short a "steel-guarded" pavement is as good to look at as it is durable.

Preventing Seepage

In cases where the steel guard is set away from the rail to allow for the overhang of the car wheel, a filler of asphaltic grout completely seals the entire understructure against seepage of moisture and sand. If the head of the rail is sufficiently wide, the guards are set against the rail.

PROVED BY YEARS OF SERVICE ON MANY MILES OF PAVING

Steel Paving Guards have done more than prove their case in theory. They are actively engaged, now, in cutting the maintenance charges of many miles of paving. They are used successfully on every type of highway construction.

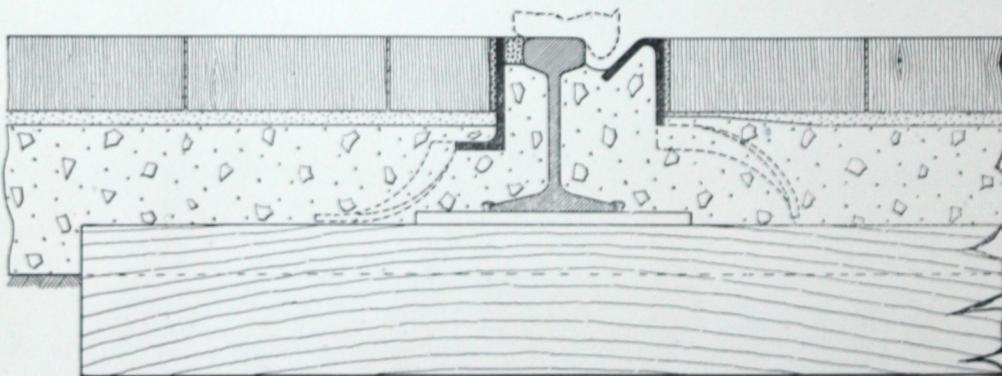


FIG. 31

3" Block Paving—6" Concrete Base—1" Mortar Cushion—7" "T" Rail—4½" Straight Guard—4½" Flangeway Guard.

CUTTING MAINTENANCE CHARGE TO A MINIMUM

Seldom has a paving device received more instant attention in the engineering world than the Godwin Steel Paving Guard. The reason is not hard to find. It not only solves a serious problem, but it is basic in its principle. *It is not a superficial makeshift.* By those who have used steel paving protection, it is conceded to have an *immediate* and *decided* effect upon the total maintenance of way charges. The Steel Paving Guard is unquestionably one of the biggest steps forward in recent years in street railway engineering. Steel Guards have made it possible to maintain paving at the rail at a minimum cost. By protecting the edge of the paving at both the outside and the inside of the rail, Steel Paving Guards cut the maintenance cost for either the city or the railway company.

PROVEN PROTECTION AGAINST MODERN DESTRUCTIVE TRAFFIC

Steel Paving Guards vs. Liners

Block liners allow but 2" to 3" of concrete base over the cross ties. As every engineer knows, this is not sufficient to withstand the concentrated shock of a loaded motor truck—10,000 lbs. at the traction point of one wheel not being unusual. The necessary 4" to 5" of concrete base over the ties, as desired by all engineers, is quite obviously possible with the Steel Paving Guard. *It is also important to note that the edge is given additional strength by being tussed by the guard.*

TWO ECONOMICS IN CONSTRUCTION

1—Steel Paving Guards permit the satisfactory use of broken stone or natural soil under the ties—with a consequent large saving over concrete for this purpose.

2—Sheet asphalt or any other bituminous surface may be used with perfect safety in the entire railway area, when protected by Steel Paving Guards. This feature alone more than justifies the use of the Godwin Steel Paving Guard.

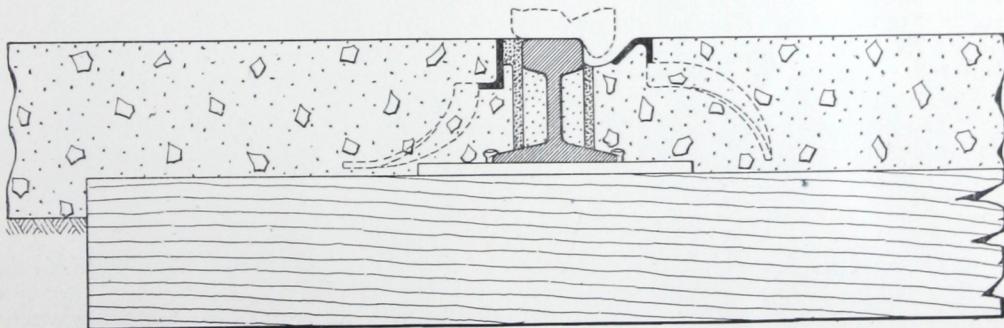


FIG. 33

6" Concrete Paving—5" "T" Rail with Parging—Asphaltic Grout Filler—2" Straight Guard—2" Flangeway Guard.

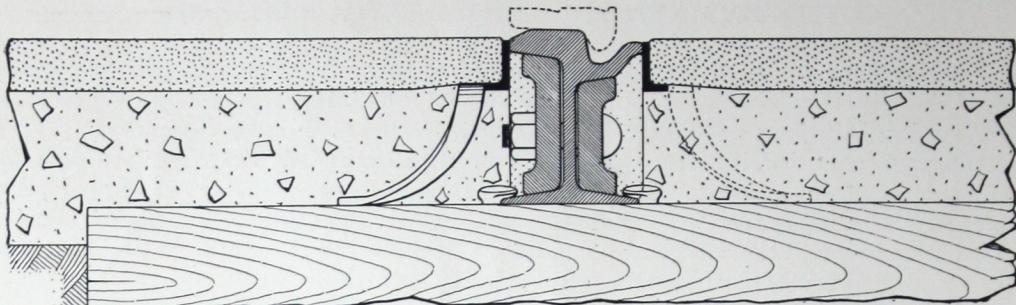


FIG. 12

2" Asphalt Paving—6" Concrete Base—7" Grooved Rail with Parging—2" Straight Guards—
Note that the Plates and Bolts are accessible.

SUITED TO EITHER THE GROOVE RAIL OR THE "T" RAIL

Steel Paving Guards are equally adaptable to both types of rail—and, therefore, hold no brief for either.

With the Groove Rail

The lip of the Groove Rail offers better protection for paving than the "T" rail. Steel Paving Guards make this protection absolute. By replacing headers and liners provide an absolutely smooth and unbroken paving surface across the entire street and railway area—important to railway and municipal engineers alike.

With the "T" Rail

Railway engineers who favor the "T" rail find a special satisfaction in Steel Paving Guards. For use with the "T" Rail a special type (Flangeway Paving Guard) is made. It undeniably meets the only objections to the "T" rail raised by municipal engineers.

The Flangeway Paving Guard will permit the use of the "T" rail with absolute satisfaction to any municipal engineer. The illustrations show how perfectly it takes the place of the lip of the Groove Rail. In connection with the "T" Rail it forms a flangeway for the car wheel, gives a smooth continuity of paving surface and both strengthens and protects any kind of track paving.

If there be any merit in the broad claims of superiority of the "T" Rail over the Groove Rail, Steel Paving Guards certainly open the way for their universal use. Members of the American Electric Railway Association are unanimous in the statement that the "T" Rail is superior to the Groove Rail from their standpoint. They present these facts. The initial cost of the "T" Rail is considerably less than the Groove type. It has at least 25% longer life, less rail corrugation, less expense to maintain and renew, and a lower interest on the investment.

The Flangeway Steel Paving Guard is, in reality, far superior to the lip of a Groove Rail as protection for the paving—for it is an integral part of the paving itself instead of being a part of the constantly vibrating track structure.

Reducing the Shock of Cross Traffic

The steel guard, remaining permanently level with the rail, maintains the only conceivable perfect continuity of paving, and so eliminates the intensified and destructive impact of cross traffic, as it bumps across the varying levels of paving and rails in the railway area unprotected by steel. It also facilitates street cleaning.

The initial cost of the Flangeway Paving Guard in conjunction with the "T" Rail is usually less than the initial cost of the Groove Rail either with or without any other form of paving protection.

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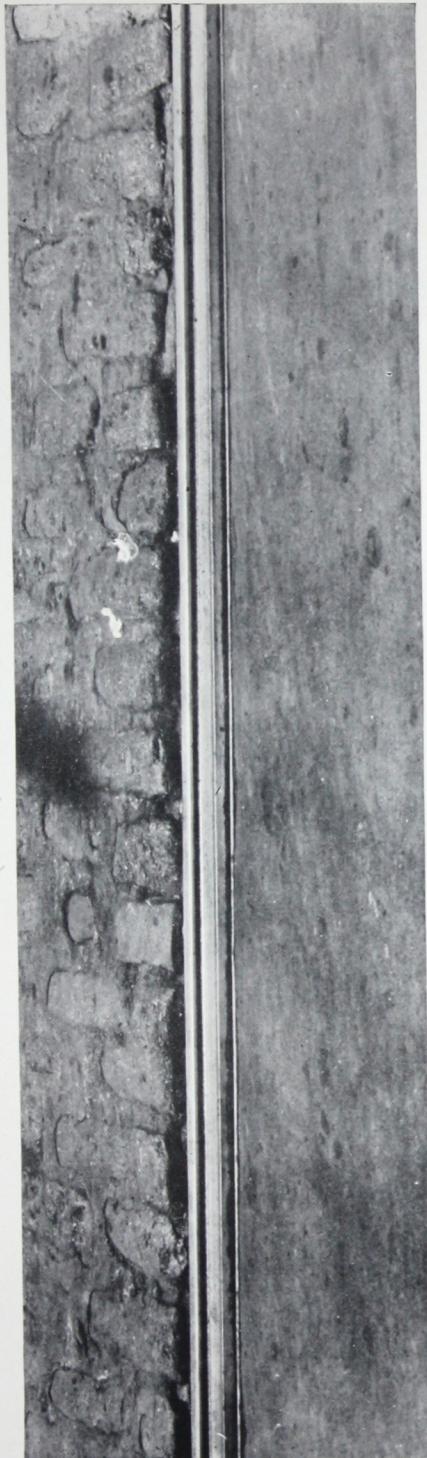


FIG. 50

Five years comparative service of Steel Paving Guards and Block Lines

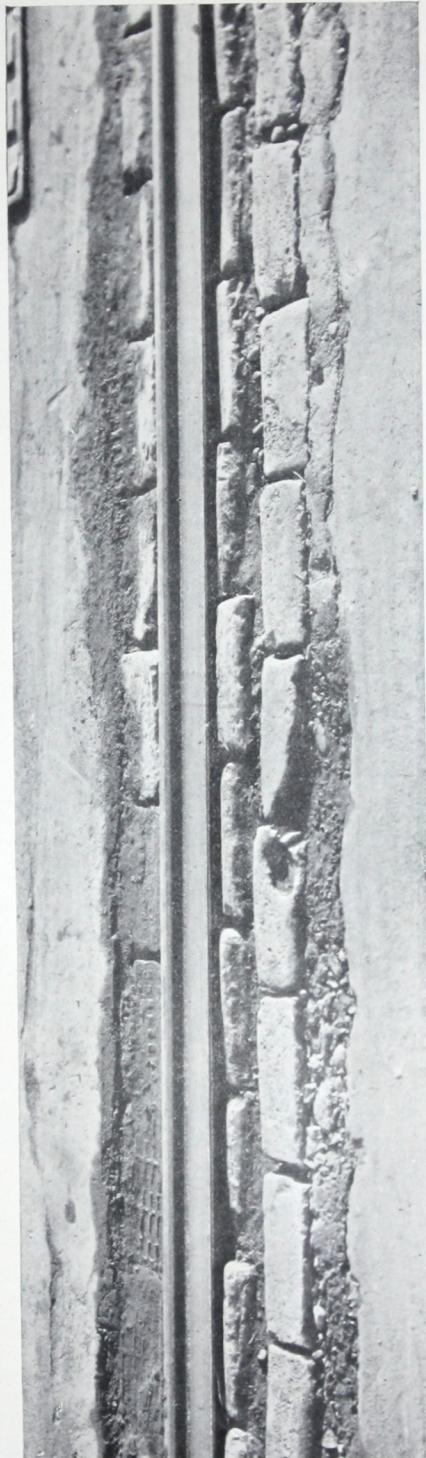


FIG. 51

+ STEEL + PAVING + GUARDS + PROTECT + THE + EDGES + STRETS + ROADS + CURBS + RAILWAY - PAVING - ETC. +

++W. + S. + GODWIN + COMPANY + INCORPORATED + BALTIMORE + MARYLAND ++

COSTS LESS TO INSTALL

Table Showing Initial Saving in Construction of Steel Paving Guards Over Block Liners

	Liners 8" wide =.074 sq. yds. per lineal foot	Liners 9" wide =.082 sq. yds. per lineal foot	Liners 20" wide .185 sq. yds. per lineal foot	With no liners repairs average 12" wide=.111 sq. yds.
Liners, per sq. yd.....	@ \$5.50 = \$0.41	@ \$5.50 = \$0.45	@ \$5.50 = \$1.02
Asphalt, per sq. yd.....	@ 2.00 = .15	@ 2.00 = .16	@ 2.00 = .37	@ \$3.00 = \$0.33
Differential, per sq. yd.....	@ 3.50 = .26	@ 3.50 = .29	@ 3.50 = .65	.22
Steel Guard, per lin. ft.....	.22	.22	.22	
Saving, per lin. ft., 1 width.....	.04	.07	.43	.11
" " 4 widths.....	.16	.28	1.72	.44

Prices are for finished paving, base and top. Use costs and widths to suit local conditions.

IDEAL FOR UNPAVED RAILWAYS

It is often necessary to pave that portion of highways on either side of the railway area, beyond the ends of the ties, and at some future time to extend the paving to include the railway area.

Prior to the use of Steel Paving Guards for this purpose, stone and concrete headers were used to protect the edges, both of which are expensive to install, and expensive to remove when it is desired to extend the paving across the railway area.

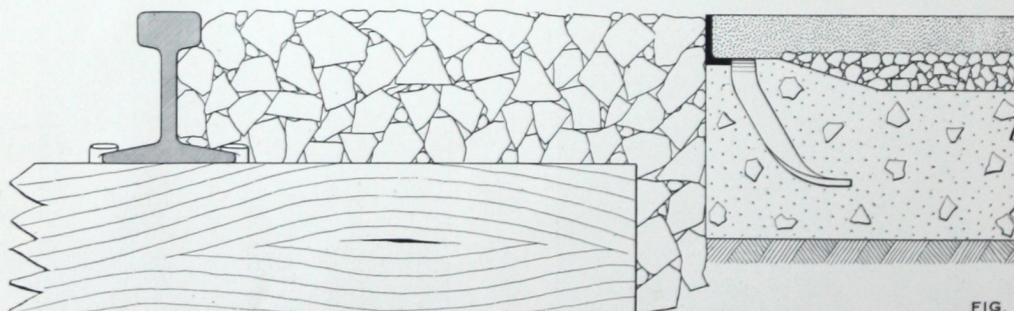
If the stone or concrete headers are not removed when the railway area is paved, it not only affects the appearance of the finished street, but the headers soon form a ridge due to the uneven wear of the header and any adjacent paving material. The use of Steel Paving Guards on the edges of the original paving has three advantages.

1—The initial cost is lower.

2—When ready to pave the railway area, the vertical leg of the guard can be easily cut off with an acetylene burner without disturbing the adjacent paving.

3—This cost of removing about equals the price of scrap steel secured.

For unpaved railways—Steel Paving Guards therefore afford lower first cost, perfect protection, and no cost for removing.



Unpaved Railway Area
3" Asphalt Paving—6" Concrete Base—2" Straight Guards

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UNPAVED RAILWAY AREA



FIG. 20

West Virginia State Road at Elm Grove. (One of five orders).

(Photographed before stone was placed.)

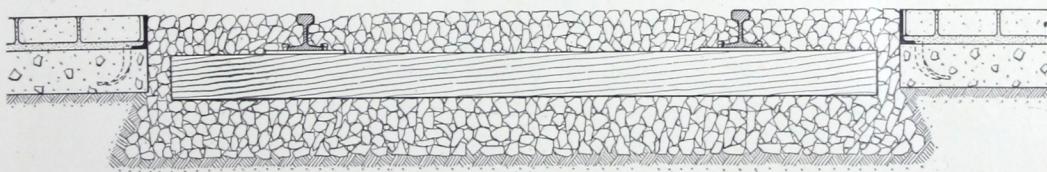


FIG. 21

4½" Straight Paving Guards— $\frac{3}{8}$ " Expansion Joint—4" Brick Paving—1" Mortar Cushion—
6" Concrete base—5" "T" Rail—Broken Stone in Railway Area.

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SPECIFICATIONS FOR GROOVED RAIL CONSTRUCTION

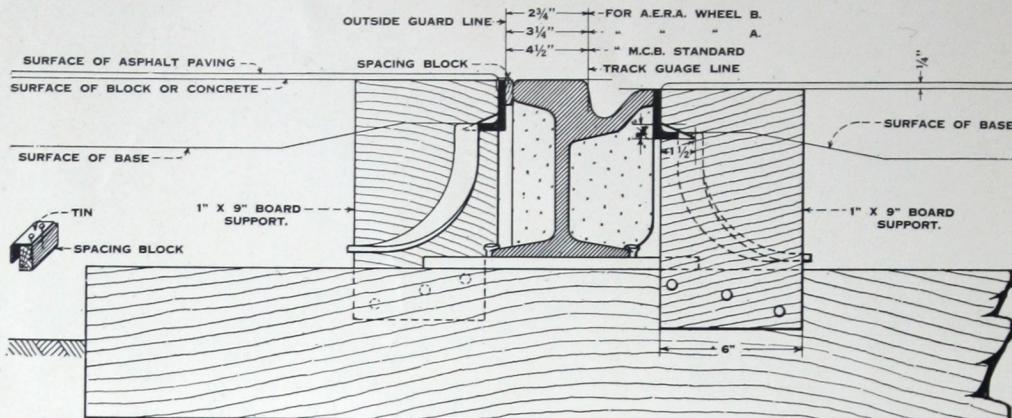


FIG. 34

(See Page 12 for Steel Paving Guard Specification.)

These guards are to be placed on both sides of each rail. The top of the outside guards to be level with the rails, and spaced" beyond the track gauge line. (This space, if any, depending upon the widest tread of the car wheel used. See Fig. 34). The guards between the rails; to be level with the lip of the grooved rail and placed close against it.

All guards shall be perfectly straight before they are set. Use sufficient wooden supports and spacing blocks to hold them to grade, vertical and uniformly parallel with the rail until the concrete is set. If the track is not in use the guards may be clamped to the rails.

The concrete shall be thoroughly tamped and worked *under* the guards and finished level with the *top* of the horizontal leg. There shall be sufficient grout poured, immediately after tamping the concrete, between the rails and the guards, to assure a uniform rigid bearing. After the concrete is set, break off that portion of the wooden supports protruding above the concrete base.

If asphalt paving is used, the side of the guard toward the paving must be cleaned and thoroughly painted with asphaltic paint. The space between the rail and the outside guard shall be filled with hot asphaltic grout, half sand and half 100 to 110 penetration asphalt.

All asphalt paving shall be finished $\frac{1}{4}$ " above the top of the guards. All block and concrete paving shall be finished level with the top of the guards.

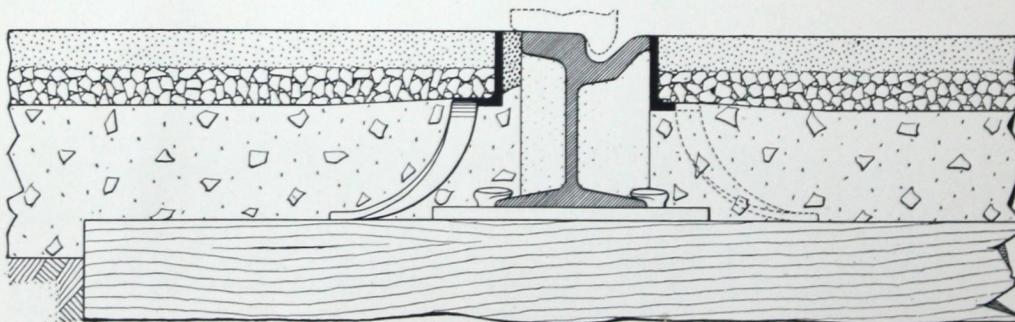


FIG. 11

3" Asphalt Paving—6" Concrete Base—7" Grooved Rail with Parging—3" Straight Guards—Asphaltic Grout.

SPECIFICATIONS FOR "T" RAIL CONSTRUCTION

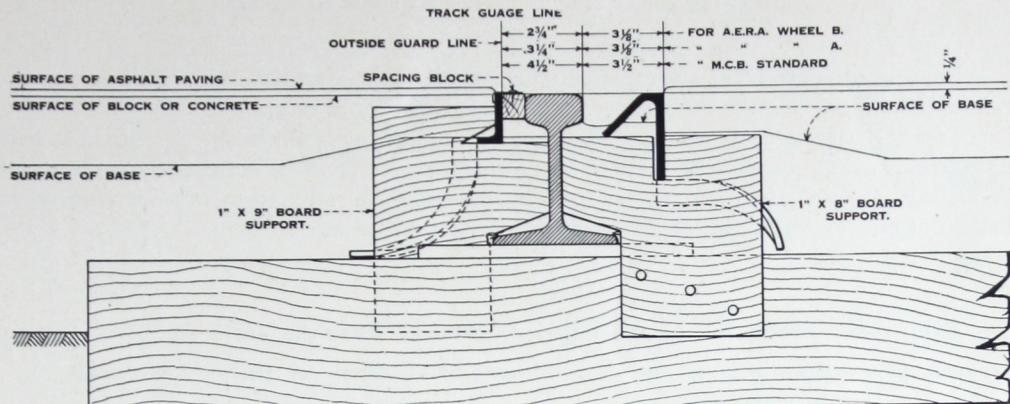


FIG. 35

The Flangeway Paving Guards are to be fabricated from -"x--"steel angles in---' lengths. The horizontal leg to be bent to an angle of 45 degrees. The 1" anchors are to be sheared from the bottom of the vertical leg not over 10" centers, twisted and bent so the ends will be about level with the top of the ties.

These guards are to be placed on the inside of each rail. The top of the guards to be level with the top of the rail and spaced ----" inside the track guage line. (This distance depending upon the size of the flange of the car wheel used. See Fig. 35.)

The top of the concrete base adjacent to the outside of the guard shall not be more than 3" from the top of the guard. The groove-way, formed by the rail and the flangeway guard, to be immediately filled with cement grout to a level $\frac{1}{4}$ " below the car wheel flange.

For installing the straight outside guard, rail filler, paving, etc., see specification under grooved rail construction.

The web of all rails can be filled with Parging, Concrete or Planks, as shown in Figure 32 33, 12, 11, 34; or the concrete base can be continued up to the web of the rail, as shown in Fig. 30, 31, and 35. The former construction is preferred by most engineers.

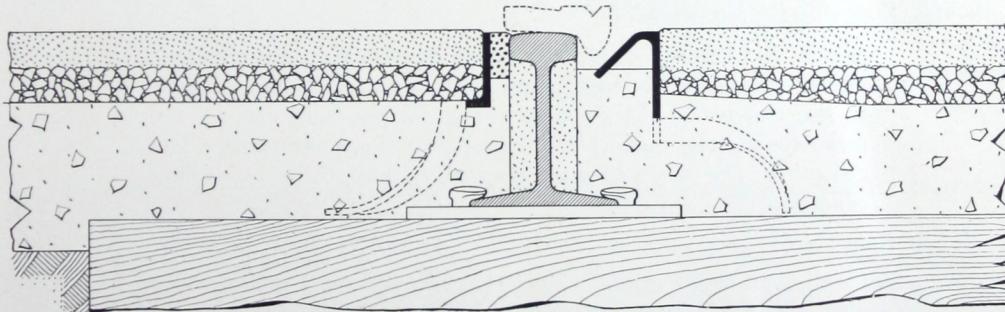


FIG. 32

3" Asphalt Paving—6" Concrete Base—7" "T" Rail with Parging—3" Straight Guard—4 1/2" Flangeway Guard.

PRE-CAST CONCRETE RAILWAY CROSSINGS PROTECTED BY STEEL PAVING GUARDS

Pre-cast concrete slabs are rapidly replacing both planking and monolithic paving for railway crossings. On the basis of economy alone, this type of crossing has proved its superiority for the past seven years. Its advantage over planking is obvious. As compared with monolithic paving, it should be borne in mind that the concrete slabs are entirely independent of the rails and are, therefore, not affected by the excessive rail movement under the terrific impact of railway traffic, which disintegrates the best of paving.

The proper protection of the edges of pre-cast concrete slabs by Steel Paving Guards, is the final step in the development of this type of railway crossing.

The standard $1\frac{1}{4}$ " Straight Steel Guard is cast into all the upper edges of each slab and forms a perfect and permanently durable protection against the impact of vehicle traffic. For the edges inside the rails, the standard 2" Flangeway Guard is used. This, in connection with any rail, forms a safe and durable flangeway which interferes with neither pedestrian nor vehicle traffic.

The movement of the slabs is prevented by lag screws being placed in the tapped inserts. By inserting eye bolts into these same inserts, the slabs are easily placed, or removed for inspection or maintenance.

SIMPLE AND INEXPENSIVE TO MAKE

The slabs are made by the railway companies or contractors, at odd times, at convenient points, and shipped as desired. Consequently, it costs little to make and install them. The slabs are readily placed and removed by four men by placing crow bars through the eye bolts after removing the lag screws.

The W. S. Godwin Co. supplies all the necessary steel products—paving guards cut to length, iron inserts and reinforcing rods cut to size and bent—also detail drawings for the slabs and for the forms for making them, bill of materials and specifications. The design can be changed and adapted to any track or paving condition.

These slabs are designed for a vehicle wheel load of 8,000 pounds.

When ordering, state width of highway at the crossing—track guage—height from top of the ties to top of the rail—width of rail head. If double track, give distance center to center of tracks.

Lineal foot price includes *all* the steel products; multiply this price by the length of crossing for total cost.

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+STEEL+PAVING+GUARDS+PROTECT+THE+EDGES+OFF+STREETS,+ROADS,+CURBS,+RAILWAY-PAVING+ETC+

PRE-CAST CONCRETE RAILWAY CROSSINGS

protected by Steel Paving Guards

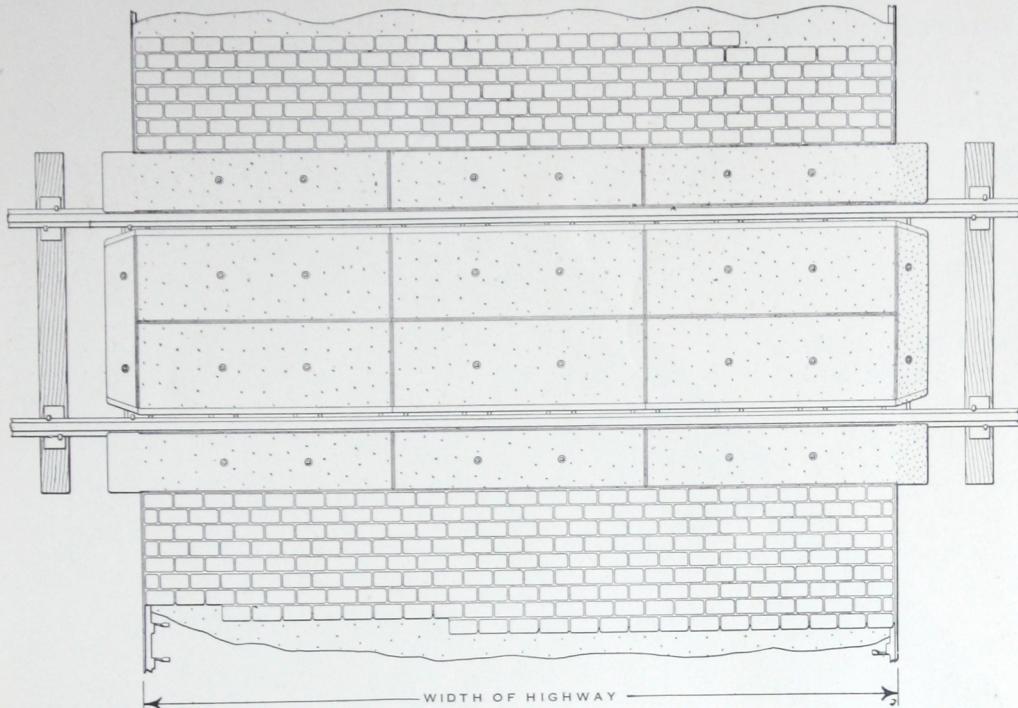


FIG. 64

Plan

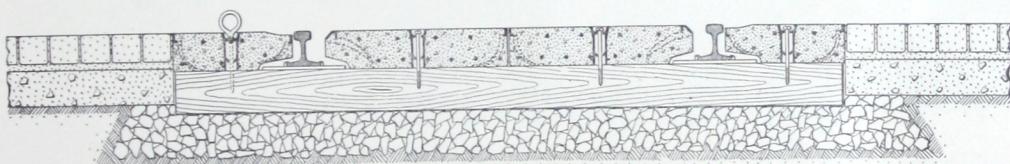


FIG. 65

Cross Section

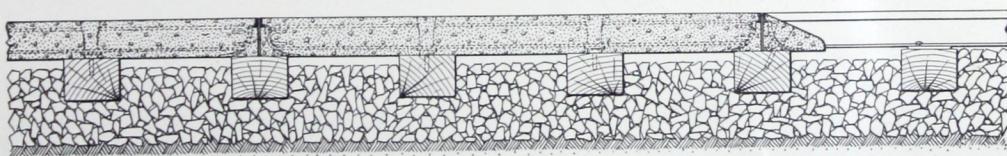


FIG. 40

Longitudinal Section

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STEEL CURB GUARDS

for
**Concrete Curbs,
Platforms,
Steps,
Etc.**

The Curb edging
that "stays put"

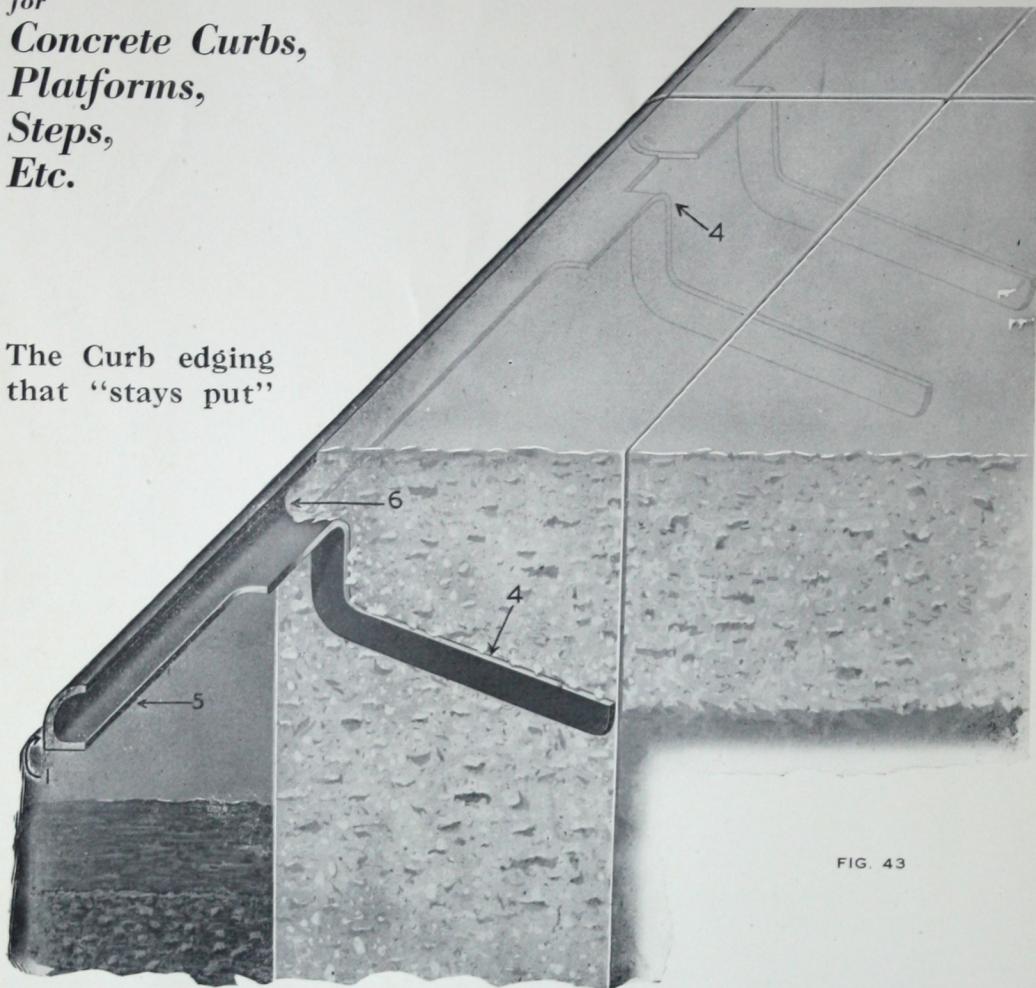


FIG. 43

BUILT FOR MODERN TRAFFIC

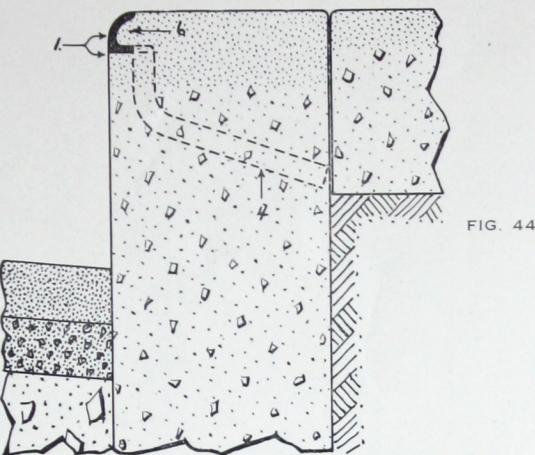
The advantage of the concrete curb with a *steel protected edge* is now an accepted fact. Modern engineering practice has adopted it almost universally. But there have been two serious faults common to all forms of steel curb edging so far introduced, *i. e.* (1) they are difficult to install properly and (2) they are too easily dislodged by the shocks of traffic. In other words, they do not always "stay put."

The old type of curb bar does not successfully resist the terrific shock, grind or shear of the modern motor truck.

The Godwin Steel Curb Guards, on the other hand, are an adaption of the now widely used Steel Paving Guard for highway paving. The same features of strong structural strength and design that are protecting many miles of American highways against the attacks of weather and erosion—under the most severe traffic conditions—these same features are adapted to furnish the same protection to the edges of curbing.

THE GUARD THAT INSURES THE CURB

Round Curb Guard



QUICKLY AND ACCURATELY PLACED

The design of all other forms of curb edging makes it very difficult to properly place and to hold them in the forms. The Godwin Guard, having a flat side surface, (See I, Fig. 44) forces itself to set rigidly in the forms, with no chance of its shifting position. For the same reason it is easily and properly bent for radius corners. Contractors who have installed curb guards appreciate this feature.

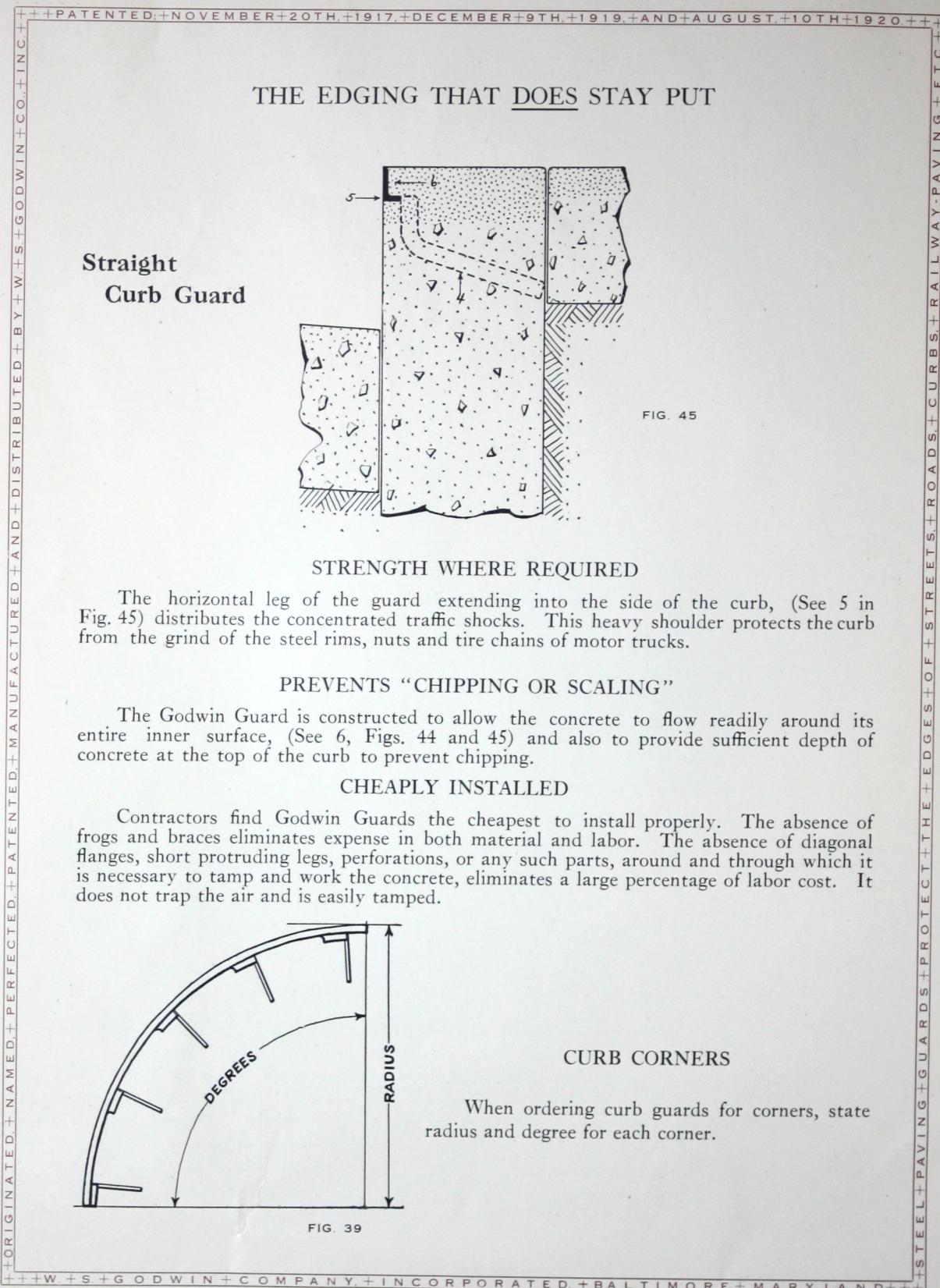
The Godwin Installing Clamp (see Fig. 62, page 29) is made especially for use with the curb guards. The clamps are inexpensive and effective. They can be used on curb or straight guards.

NO LOOSE PARTS

The usual loose frogs and braces necessary to hold other types of curb edging, both before and after the concrete has set, are not used with the Godwin Guard.

POSITIVE ANCHORAGE

The anchors (See 4, Figs. 44 and 45) of the Godwin Guard are sheared from the horizontal leg and extend 7 inches into the concrete base, providing extreme rigidity and positive anchorage every 10 inches—and near the end of each length of steel guard. These anchors are an integral part of the guard itself. They take the place of perforated flanges, and short protruding legs, which provide the sole anchorage for all other types of curb edging, and which defeat their own object by obstructing the proper flow of concrete in and around them. The Godwin Guard is undeniably the only curb edging which assures positive anchorage.



SIMPLICITY OF INSTALLATION

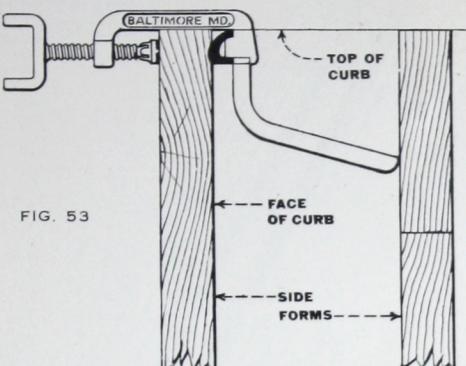


Diagram showing the easy and accurate installation of Godwin Curb Guards. Specially designed clamps hold the guards fast in place while the concrete is being placed.

SPECIFICATIONS
FOR
STEEL CURB GUARDS

The top edge of the face of the concrete curb shall be protected by a galvanized steel curb guard. The price bid for curb shall include the cost of furnishing and installing the guard.

The guards to be not less than $3/16''$ in thickness, the top edge to have a radius not less than $5/8''$, and a $5/8''$ horizontal flange at the bottom, from which the anchors are sheared. These anchors, which project diagonally into the curb, are to be not over 12" apart and at least 6" long.

Fasten the guards to the side form with sufficient clamps (at least 2 to each length) to hold the guards to line and grade while the concrete is being placed. The concrete shall be thoroughly WORKED around and UNDER the guard before the clamps are removed, and the small spaces filled.

Keweenaw

PAVING GUARD CLAMPS



These clamps are especially designed to automatically and properly place and hold curb guards against the side form while the concrete is being placed and tamped. They are also used for installing the straight guards.

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GODWIN GUARDS

Straight Guard.

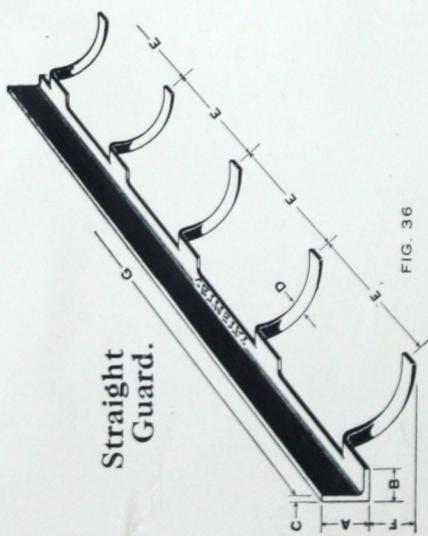


FIG. 36

Flangeway
Guard.

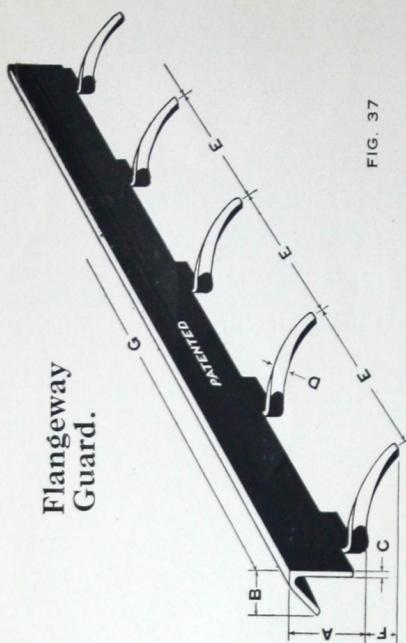


FIG. 37

Curb
Guard.

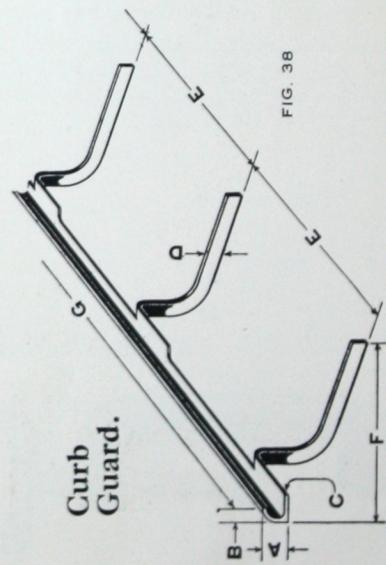


FIG. 38

Dividing
Plate

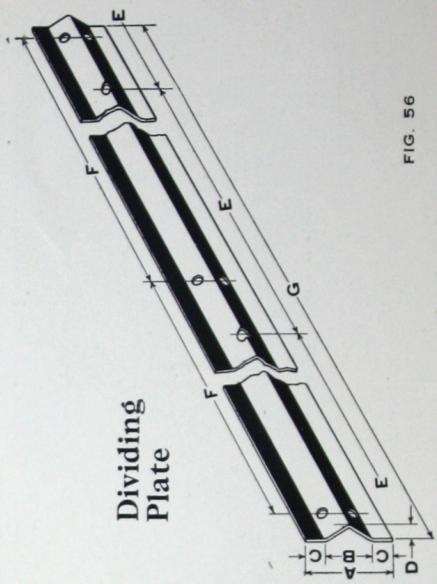


FIG. 56

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DETAILS OF GODWIN GUARDS

STYLE	Size	DIMENSIONS						Lbs. per Ft.	ADAPTED TO	Code For Telegraphing.	Feet In Min. Car Load	PRICE PER FOOT.	
		A	B	C	D	E	F					Car Load	Car Less Load
Straight.....	1 1/4"	1 1/4"	3/8"	5/8"	9 3/4"	4 3/4"	15'	1.5	Concrete and Pre-cast Railway Crossings.....	ABASE	24,000		
Straight.....	2"	2"	3/4"	1"	9 3/4"	4 3/4"	15'	2"	to 3" Asphalt and Concrete.....	BASIN	11,250		
Straight.....	3"	2"	5/8"	1"	9 3/4"	4 3/4"	15'	3.2	3" to 3 1/2" Asphalt, Brick and Block.....	CABAL	7,200		
Straight.....	4 1/2"	3"	5/8"	1"	9 3/4"	4 3/4"	15'	5.0	Brick and Block.....	DEUCE	4,675		
Flangeway.....	2"	1 3/4"	1/4"	3/4"	9 3/4"	3"	7'-6"	3.2	Monolithic and Pre-cast Concrete Between "T" Rails.....	EATER	11,250		
Flangeway.....	3"	1 3/4"	5/8"	1"	9 3/4"	2"	7'-6"	5.0	2" Asphalt Between "T" Rails.....	FILCH	7,200		
Flangeway.....	4 1/2"	2 1/2"	5/8"	1"	9 3/4"	2"	7'-6"	7.7	3" Asphalt and Block Between "T" Rails.....	GLINT	4,675		
Dividing Plate	5 1/2"	3"	1 1/4"	1"	5'-2"	3'-10 1/2"	8'	1.0	Price is per lineal foot of road; and includes plates, laps, dowels and stakes.	HERON	36,000		
Curb, Round Galv.....	1 1/8"	5/8"	3/8"	5/8"	9 3/4"	6"	10'	1.6	Concrete Curbs, Steps, Platforms, Etc., Etc., Etc.	IMAGE	22,500		
Curb, Round Plain.....	1 1/8"	5/8"	3/8"	5/8"	9 3/4"	6"	10'	1.5	Concrete Curbs, Steps, Platforms, Etc., Etc., Etc.	YERKY	24,000		
Curb, Straight Galv. (Fig. 36) ..	1 1/4"	1 1/4"	3/8"	5/8"	9 3/4"	6"	10'	1.6	Concrete, Curbs, Steps, Platforms, Etc., Etc., Etc.	KNAVE	22,500		
Curb, Straight Plain. (Fig. 36) ..	1 1/4"	1 1/4"	3/8"	5/8"	9 3/4"	6"	15'	1.5	Concrete, Curbs, Steps, Platforms, Etc., Etc., Etc.	LANCE	24,000		
Bending, Round Curb.....	State Radius and Degree for each corner(price for bending only)	State Size of Guard, Total Crown and Width of Street (price is for bending only).....	State Size of Guard, Total Crown and Width of Street (price is for bending only).....	State Radius and Degree for each corner(price for bending only)	Concrete Curbs, Steps, Platforms, Etc., Etc., Etc., Etc., Etc.	Concrete Curbs, Steps, Platforms, Etc., Etc., Etc.	Concrete Curbs, Steps, Platforms, Etc., Etc., Etc.	Concrete Curbs, Steps, Platforms, Etc., Etc., Etc.	Corners of Concrete Curbs, Steps, Platforms, Etc., Etc., Etc., Etc., Etc.	MANY	—		
Bending, Straight	Special Self-adjusting and Quick Acting.....	Street and Road Inter- sections	Street and Road Inter- sections	Street and Road Inter- sections	Street and Road Inter- sections	Street and Road Inter- sections	Street and Road Inter- sections	Street and Road Inter- sections	Street and Road Inter- sections	NICHE	—		
Clamp.....	Price includes Guards and Rods Cut to Length; Inserts, Eyebolts, Specifications and Drawings.....	Installing Curb and Straight Guards.....	Installing Curb and Straight Guards.....	Installing Curb and Straight Guards.....	Installing Curb and Straight Guards.....	Installing Curb and Straight Guards.....	Installing Curb and Straight Guards.....	Installing Curb and Straight Guards.....	Installing Curb and Straight Guards.....	OARED	—		
Railway Crossings	Railway Crossings	Precast Concrete Paving in Railway Area.....	Precast Concrete Paving in Railway Area.....	Precast Concrete Paving in Railway Area.....	Precast Concrete Paving in Railway Area.....	Precast Concrete Paving in Railway Area.....	Precast Concrete Paving in Railway Area.....	Precast Concrete Paving in Railway Area.....	Precast Concrete Paving in Railway Area.....	PAGAN	—		

NOTES—The above sizes, dimensions, styles and lengths are standard stock. Write for prices and time of delivery on special sizes, shapes and dimensions giving complete details. Use Above telegraph code when telegraphing inquiries or orders.

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